JAMAICA.

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

THE YEAR ENDED 31ST DECEMBER, 1925.

Ordered by His Excellency the Governor to be Printed.

JAMAICA
GOVERNMENT PRINTING OFFICE, KINGSTON.
1926.

DEPARTMENT OF SCIENCE AND AGRICULTURE.

REPORT FOR THE YEAR ENDED 31ST DECEMBER, 1925.

DEPARTMENT OF SCIENCE AND AGRICULTURE,

Hope, Kingston, 22nd February, 1926.

Sir,

I have the honour to submit for the information of His Excellency the Acting Governor, the report of the Department of Science and Agriculture for the year 1925.

I.—GENERAL OBSERVATIONS.

Conditions for agricultural production have been favourable. Our chief staple, bananas, achieved a record of 15 million stems exported or a gain of 3 million stems on the previous year's production.

Cacao remained steady but is not an attractive crop under present conditions of price. The coconut trees all over the island have made a welcome recovery and look better than they have done for some years. The crop shows a gain of about 4 million nuts over 1924. Prices have fluctuated, but, on the whole, the coconut industry has prospered. Coffee shows a welcome increase from 2,600 tons to 5,200 tons and prices have been good. In reviewing the status of our staple crops, coffee stands out as the product to which Jamaica should now give special attention. The scope for large coffee plantations in Jamaica is limited, but the growth of coffee by our large population of small landowners can be greatly extended to obvious advantage.

The coffee crop should be doubled with the least possible delay. I commend the propaganda of "more coffee" as a sound one for the Agricultural Society to take up with the full enthusiasm of its many branches. Logwood and logwood dyes have been rather under a cloud and the exports show a marked falling off with respect to the manufactured product. Ginger shows an increase of about 50 per cent. over the previous year. Prices have fluctuated somewhat but the demand for Jamaica Ginger seems to be improving. Grape Fruit shows an improvement of nearly 60 per cent. The preference in the Canadian market has led to an increased trade in grape-fruit which should grow into something of value

for our producers of this fruit. It has been demonstrated that seed from a selected strain of grape-fruit growing in the Port Royal Mountains reproduces itself with remarkable certainty.

The seedling grape-fruit trees distributed from the Hope Nursery have been found to produce excellent fruit. Arrangements have now been made to propagate 100,000 seedling grape-fruit trees in 1926 for general distribution.

Jamaica should find it easier to secure a large market for her grape-fruit than her oranges and it appears to be sound policy to extend plantations of grape-fruit at the present time.

The seasons were favourable for the production of honey which showed an increased production of nearly 70 per cent. as compared with 1924. Pimento shows an increased trade of 50 per cent. in quantity and 150 per cent. in value.

The year was a good one for the production of sugar and rum. The exports of sugar were approximately 38,000 tons as compared with 23,000 tons in 1924. Rum showed an increase of about 3,900 puncheons over the exports of the previous year. The trade in high-flavoured rum is returning and some Northside Estates producing rums with a high content of compound ethers realised record prices for their product.

Unfortunately the enormous increase in the Cuban production has tended to lower the price of sugar to such an extent that there was only a moderate margin for profit on the very good sugar crop that was produced in 1925. The greatest event of the year as regards sugar was the erection of the large central factory in St. Thomas by English capital. Remarkable results have been obtained in the rapid development of cane cultivations in this area.

Sisal Hemp is developing as an industry. The pioneers are now beginning to see daylight through their initial difficulties, and there is now reason to believe that the fibre industry will steadily gain in size and value. The Government Factory at Lititz operated for half the year and has produced a crop of 113 tons of fibre which is expected to show a profit of £1,000 over the cost of operating the enterprise. About £300 was paid to local growers for leaves by the factory. The fibre produced, owing to the extreme sterility of the derelict Crown land on which the sisal has been grown, has been almost wholly of "No. 2" quality selling at £35 per ton in London.

Tick Destruction.—During the year 9 new dipping tanks were registered bringing the total number for the whole island to 258. The Government Laboratory issued 13.3 tons of paranaph and 7.8 tons of arsenite of soda besides keeping owners supplied with the necessary materials for testing the dip. A trial is now being made of the addition of a blue dye to the arsenite of soda so that the felonious use of this dangerous poison may be made more difficult.

Panama Disease.—The records of this disease show an increase over that for 1924. The floods of November, 1924, spread infection with the result that in some areas infection of alluvial lands took place. The staff of inspectors was increased to 14 with one supervising inspector so as to cope with the conditions. In Portland it has been found necessary to reduce the quarantined area to the minimum possible involving the destruction of 9 plants including the diseased plant.

Experiments in "curing" the disease have been carried out during the year by private persons under the supervision of the Department. These have been quite unsuccessful.

A Patent for treating soil with Carbon Bisulphide so as to free it of the Fusarium fungus was taken out during the year. The trials of this treatment have, so far, been unsuccessful. Two bananas which are new to Jamaica and are resistant to disease were introduced during the year. The "Giant Fig" from Grenada and the "Bumelan" from Dutch Guiana. Encouraging results in the cultivation of the "Robusta" banana on clay lands in St. Mary have been obtained. It appears likely that this immune variety will give good commercial fruit when grown on the heavier soil. Three cross-fertilised banana seedlings have already been obtained at Hope and about 100 seedlings are expected from the seeds raised during the year. As the only successful pollinations were effected during the month of May it was decided to establish a banana breeding plot at Castleton in a damp climate. The future of the banana industry of Jamaica demands the production of a new banana which is resistant to disease and is also acceptable to the trade.

The Hope Farm had the most successful year in its history. As a result of a drastic elimination of unprofitable cows and a liberal ration of shredded Uba cane fortified with cotton seed meal (41 per cent. protein) the same number of cows which gave 300 quarts of milk a day in 1924 gave nearly 500 quarts during the same period in 1925. As the Public Institutions could not use the whole supply of Farm milk we had to construct a butter-room and embark on the manufacture of butter. This was supplied to public institutions at the contract price for imported butter.

During the year a magnificent Red Poll bull "Ruperta's Teddy," a well-known Champion and Sire of highclass stock in the United States was imported to head the Hope herd of Pedigree Red Polls. The first prize Devon bull at the English Royal Show was also imported and presented to the Government Stud Farm at "Grove Place" to replace the original imported bull which was sold to a pen in St. Elizabeth.

The well-known English thoroughbred horse "Lembach" by "Lemberg" was also imported and presented to "Grove Place" in replacement of "Water Jacket" whose career had ended after serving for 15 seasons in Jamaica.

The Grove Place Stud Farm had rather a poor year due to the depression in the livestock industry and the recurrence of Foot and Mouth Disease in Westmoreland.

Contagious Diseases of Animals.—Two outbreaks of Anthrax, one in St. Catherine and the other in St. Thomas, were dealt with during the year. The use of double vaccine has been found very successful. A recurrence of Foot and Mouth Disease broke out at "Belle Isle" in Westmoreland on May 29th. The outbreak was dealt with by slaughter. On the 15th July, a further outbreak was discovered at "Cornwall" and "Shrewsbury" Estates. As the extent of the infection was likely to be large, slaughter was not adopted in this case but the quarantine enforced was so successful that no cases spread outside the infected lands. The quarantine was removed except as regards the actually infected areas in Westmoreland by the Order of 5th January, 1926.

II.—PUBLIC GARDENS.

Report of the Superintendent and Horticulturist.

1. Hope Gardens.

Of the varieties of new roses which were tested several proved of merit, viz., Edel, Pilgrim, Charles K. Douglas, Mrs. Charles Lamplough, Mabel Morse. Plants of these grown on their own roots have been imported for sale. A further collection of new varieties from Ulster has been imported this year for trial.

A large number of varieties of Cannas were imported and tested for horticultural merit and some of these have proved successful and are worthy of further development. The best of these are, Nokomis (Crimson), Ambassador (Cherry Red), President (Red), Dr. E. Ackernecht (Carmine), Aviation (Vermillion), Enchantress (Rose), Scheherazade (Rose), King Midas (Yellow), Golden Eagle (Yellow).

An effort has been made again this year to obtain seedlings of Bougainvillea by hybridization and as a result several seedlings have been obtained by crossing the Brick-red and Rosa Catalina varieties. The seedlings obtained by cross-fertilization during 1924 have not yet flowered.

Further progress was made in the development of the orchid collection by the addition of a number of new varieties obtained from abroad.

Two feet of concrete has been built on to the top of the Water Lily Tank so as to increase the depth. Twelve varieties of Nymphaeas have been planted out in the tank.

The distribution of economic trees to settlers in the Port Royal Mountains for the purpose of re-afforestation was again carried out by Mr. A. P. Hanson, Agricultural Instructor for St. Andrew, whereby 6,725 plants were distributed.

Plants Distributed from Hope Gardens, 1925.

Sold.		
Economic Plants—		
Cacao	..	208
Citrus	..	1,289
Nutmeg	..	237
Eucalyptus	..	147
Misc. Fruit and Economic Plants	..	3,378
		5,259
Ornamental Plants	..	24,939
		30,198
Free Grants.		
Economic Plants—		
Cacao	..	300
Citrus	..	2,600
Nutmeg	..	39
Eucalyptus	..	11
Cane Tops and Cuttings	..	199,102
Elephant Grass Cuttings	..	127,950
Misc. Fruit and Economic Plants	..	6,268
		336,270
Ornamental Plants	..	4,958
		341,228
Total number of Economic Plants	..	341,529
Total number of Ornamental Plants	..	29,897
Total number of Plants distributed	..	371,426

The following statement shows the distribution of plants for the last three years from the Nursery at Hope:—

	1925.	1924.	1923.
Cacao	508	193	220
Citrus	3,889	3,496	4,009
Nutmeg	276	431	878
Eucalyptus	158	183	333
Cane Tops and Cuttings ..	199,102	421,385	225,116
Elephant Grass Cuttings ..	127,950	..	..
Misc. Fruit and Economic Plants including Timber Trees ..	9,646	9,939	16,730
Ornamental Plants	29,897	30,071	28,723
	371,426	465,698	276,009

2. Castleton Gardens.

During the early part of the year under review the Tourist Association erected a Rest House which had long been wanted.

These gardens contain a large number of plants of interest many of which flowered during the year, e.g., *Posoqueria longiflora, Saraca indica, Amherstia nobilis, Wormia Burbidgei, Erythrina crista-galli, Michelia champaca, Barringtonia speciosa, Bassia latifolia, Couroupita guianensis, Cassia nodosa.*

The mangosteen trees, owing probably to unfavourable weather conditions, have not fruited for the last two years. About an acre of land was cleared to the east of the Gardens and planted in varieties of bananas for hybridizing purposes.

The usual routine work necessary for the upkeep of the gardens was attended to.

Plants Distributed from Castleton Gardens.

Sold.	
Economic plants	101
Ornamental plants	1,383
	1,484
Transferred to Hope.	
Economic Plants	517
Ornamental Plants	19,163
	19,680
Total Number of Economic plants ..	618
Total number of Ornamental plants	20,546
	21,164

3. Public Gardens, Kingston.

Three shruberies in the centre of the Park were cleared and the land planted in grass.

The Ruby Bougainvillea has proved so successful as an all-the-year flowering shrub that it is now being planted extensively throughout the park.

A Canna bed about 30 ft. long was made to the south of the park and planted with the variety King Humbert.

The general routine work of mowing lawns, weeding and manuring beds, and watering was tidy constantly attended to and the park kept at all times in a fairly tidy condition.

The Memorial Square has received constant attention and was attended to regularly and kept in good condition.

General pruning of the street trees was regularly attended to and the trees kept within bounds.

4. Hill Gardens, Cinchona.

Fifty-one varieties of rose plants budded on Briar stock were imported from Messrs. Alex. Dickson & Sons, Ltd. These were tested out at Hope, but the majority were found to be unsuitable for the low-land conditions. During August, 1925, these were transferred to Cinchona and have so far proved successful at the higher altitude.

Varieties of Fuchsia, Pelargonium and Hydrangea were imported. A bed of Hydrangeas was planted out in the lower terrace lawn and should prove an attractive addition to the Gardens. The Fuchsias and Pelargoniums were put out in the Glass Houses.

A number of seeds and plants were received from botanical institutions abroad and from interested parties in the Island, and are being grown at Cinchona.

All beds and borders have been cultivated and are in good order. The lawns and terraces have been regularly cut and the walks and pathways through the gardens weeded and kept in as good condition as possible.

5. King's House Gardens.

Several rose beds have been dug up and manured and replanted with J. J. L. Mock, Radiance, Etoile de France, Columbia, Laurent Carle, Kaiserin Augusta Victoria, and Helen Good. The rose beds under the trees have proved a failure and consequently have been levelled and made into lawns.

The Lily Tank which had been filled up and planted with Crinums, etc., has been restored to use as a water lily tank and Nymphaeas planted.

A Greenhouse which had been imported during 1914 for these gardens, but which had not been erected owing to the financial depression during the war, was erected during the year under review.

6. Gordon Town Garden.

This small garden situated in the centre of Gordon Town was maintained in a tidy condition by a gardener sent fortnightly from Hope Gardens.

7. Bath Garden and Nursery (St. Thomas).

Mr. H. G. Coote, Inspector of Plant Diseases, who is in charge of this garden reports as follows:

During 1924, the garden was re-modelled and intense cultivation was resorted to during the year under review to force growth and to bring into flower the various shrubs and climbers that had been put in. The garden and nursery had a good year, ideal garden weather having prevailed throughout.

The Public is showing a good deal of interest in this garden.

The following plants were distributed during the year:—

Economic Plants:	
Cinnamon	137
Nutmeg	340
Cacao	800
Cane Cuttings	2,000
	3,277
Ornamental Shrubs	85
	3,362

8. Danks Nursery.

Mr. C. E. Scott, who is in charge of this nursery in which Uba cane has been planted to supply tops to the small settlers in the district where Mosaic Disease is prevalent, reports as follows:—

During the year 53,000 tops and cuttings have been distributed and it is estimated that there will be between 800,000 and 1,000,000 plants available for 1926.

9. Denbigh, Belle Plain and Retreat Nurseries (Clarendon).

Mr. W. H. Redpath, Inspector of Plant Diseases, is in charge of these nurseries and reports as follows:—

Denbigh Nursery.— Situated on Denbigh Estate, the property of the Hon. G. W. Muirhead who gave 14 acres for the purpose of growing Uba cane for distributing tops to small farmers and others in this district where Mosaic Disease was prevalent.

The total number of tops distributed during the year was 134,000. The remaining old canes in the nursery have been cut to allow young shoots to come up for distribution during the Spring and Fall of 1926.

The rainfall at this nursery was 24.80 inches, the greater part of which fell in May and June.

Belle Plain Nursery.—50,000 Uba tops have been distributed from this nursery and large numbers are still available for distribution, but owing to the severe drought at the time of writing the farmers have ceased planting until more favourable weather occurs.

Retreat Nursery.—One and a half acres situated on Retreat Estate given by Mr. T. B. Thompson, J.P.

The canes are being ground in this locality by a Chattanooga Mill for demonstration to small settlers. One demonstration has so far been given. As the settlers are desirous of planting this variety (Uba) and the conditions are so dry, cutting has ceased until more favourable weather conditions for planting.

10. Summary of Plants Distributed by the Department during the last Three Years.

	1925.	1924.	1923.
Cacao	1,308	223	1,570
Citrus	3,889	3,496	4,009
Nutmeg	616	1,431	878
Eucalyptus	158	183	333
Cane Tops and Cuttings ..	438,102	937,489	454,306
Elephant Grass Cuttings ..	127,950	..	..
Misc. Fruit and Economic Plants including Timber Trees ..	9,884	10,010	16,803
Ornamental Plants	31,365	31,183	29,664
	613,272	984,015	507,563

11. The Garden and Plantation Sales for the past three years have been as follows:—

	£ s. d.
1925	722 13 2
1924	677 2 3
1923	652 7 0

12. The Rainfall at the various gardens for the year under review was as follows:—

1925.	Hope Gardens.	Hill Gardens, Cinchona.	Parade Gardens, Kingston.	Castleton Gardens.
Jan. ..	1.42	2.08	0.60	0.86
Feb. ..	2.19	3.70	0.85	3.23
March ..	3.90	2.56	1.19	4.11
April ..	8.61	5.83	1.10	12.50
May ..	3.70	5.35	2.60	8.03
June ..	1.53	2.92	0.35	12.14
July ..	2.20	2.53	0.70	4.45
August ..	2.66	1.07	1.91	6.36
Sept. ..	7.62	8.08	4.96	12.68
Oct. ..	2.50	2.91	0.70	4.13
Nov. ..	4.08	18.52	1.07	21.54
Dec. ..	1.33	7. 0	0.61	11.15
	41.74	62.56	16.64	101.18

M. S. Goodman,
Superintendent.
E. Downes,
Horticulturist.

III.—AGRICULTURAL EXPERIMENTS

Report of Superintendent of Agriculture.

Mosaic Disease.

It is satisfactory to report that the position, as it existed in December last year, has been in the majority of cases maintained, in that the disease has not increased and is under control and does not seriously affect the output of sugar. This, however, has only been done by vigorous and continual roguing and in some cases at considerable expense. A large estate, located in the centre of the Island, estimates that Mosaic Disease is costing them £1,000 annually in the cost of labour involved and in the loss of growing cane from roguing. It will thus be seen that on some estates the position is still very serious.

Where roguing has not been found efficient in the control of the disease due to its rapid and extersive spread, resort has been made to the Uba cane which fortunately for several estates has been found to do well. In fact several of the estates of the Island would be out of commission were it not for this cane, as it was found impossible to control Mosaic Disease on these particular estates.

As far as in me lay I have tried to keep the planters alive to the necessity of continual and vigorous measures for the control of Mosaic Disease. For if neglected even for a short time, all work done and success gained would be immediately lost. The work of the Department has been seriously handicapped in this respect by the removal, for financial reasons, of the three inspectors engaged in this work. I have, however, by watching the weak spots, maintained, and in some cases improved the position existing a year ago.

The position with regard to Mosaic Disease, in the various centres of the Island, stands as follows:

Saint Catherine: Major part, less than 5%.

Vere: Less than 1% except one area to be replanted.

Mid Clarendon: Still serious, in some cases over 20%.

Upper Clarendon: Still serious particularly among small settlers.

St. Elizabeth: Serious in all sections.

Westmoreland: Improved in last year, but still serious in ratoons and among small settlers.

St. James: Less than 1%, except in one area and among small settlers.

Trelawny: Improved, but bad in one centre, and among small settlers.

Saint Ann: Less than 1%.

Saint Thomas: Less than 1%.

Hanover: Less than 5%. In a few cases in excess of this.

Cane Nurseries.—The cane nurseries in Clarendon have served their purpose and will be abandoned at the end of the coming financial year with the exception of the one at Belle Plain near Four Paths from which there has been and is still a constant demand for tops.

Small Settlers.—Experiments have been tried in three centres to determine the value of the Uba cane as a cane suited to the Chattanooga Mill as used by the Small Settlers. In all of these tests we have found that the Uba cane offers no difficulties whatsoever in this mill, grinding as easily as the local cane, boiling as well and making as good a sugar. The growing of the Uba cane by the small settlers forms now an important problem for solution by the Department, as only with an immune cane can the Mosaic Disease be overcome in this direction. It is difficult to get the small cane grower to recognize Mosaic Disease and still more difficult to get him to rogue his fields. The solution here is an immune cane and I am introducing the Uba wherever there is the slightest encouragement for doing so.

2. Seedling Cane and Manurial Experiments on the Estates.

Seedling cane experiments are now being conducted on a large scale on the following estates:—

1. Jamaica Sugar Estates, Ltd., St. Thomas.
2. Springfield, Lindo Bros., Vere.
3. Amity Hall, Vere Estates Co., Vere.
4. Friendship Estate, Westmoreland.
5. Blue Castle, Westmoreland.
6. Charley's Estate (Frome), Westmoreland.
7. Kew Estate, Hanover.
8. Orange Valley, Trelawny.
9. Richmond, Saint Ann.
10. Llandovery, Saint Ann.
11. Worthy Park, Saint Catherine.

In these experiments 22 selected varieties are being tried out in plots, in comparison with the ordinary Jamaica cane and the Uba cane. The determining factor will be the sugar yield per acre of the various canes. It is interesting to note that at Worthy Park this year of the 22 varieties tested, the seedling B S F (12) gave 52 tons per acre as a 1st ratoon which was 17 tons per acre more than the Bourbon cane growing beside it. B178, B205, B261, B S F 1248 all gave better results than the Bourbon. Further planting of these canes has been done. The BH10 (12) cane is rapidly assuming an important part in the cane cultivation of the Island. The work of the Department in this direction is rapidly growing to the benefit of the Island.

In addition to these tests we have smaller and less elaborate tests proceeding on nearly every estate in which two or three selected canes have been established in plots for trial. The canes most generally used for this purpose are the Uba, B H 10 (12) and the Ba11569. The Uba as an emergency cane in cases of a widespread attack of Mosaic Disease and as a good cane for poor, stiff lands where other canes will not grow. In this connection, Uba has proved of great value to some planters and has enabled them to increase their output at little extra cost, also the B H 10 (12) as a heavy producer with high sugar value, suitable for good conditions and the Ba11569 for good soils with poor rainfall and no irrigation.

Manurial Experiments.

Experiments in this direction, in conjunction with a chemical and mechanical analysis of the soil are being conducted on the following estates:—

1. Jamaica Sugar Estates, Ltd., St. Thomas.
2. Springfield, Lindo Bros., Vere.
3. Friendship Estate, Westmoreland.
4. Blue Castle, Westmoreland.
5. James Charley's Estates (Frome), Westmoreland.
6. Water Works.
7. Kew Castle, Hanover.
8. Catherine Hall, St. Thomas.
9. Georgia Estate, Trelawny.
10. Llandovery Estate, Saint Ann.
11. Richmond Estate, Saint Ann.
12. Anchovy, Saint James.
13. Freeman's Hall, Trelawny.

The manures used are:—Sulphate of Ammonia, Nitrate of Soda, Sulphate of Potash, Superphosphate, Basic Slag. These are applied singly and in various combinations on plots of one square chain with check plots beside each manured plot for purposes of comparison.

3. Manurial Experiments with Bananas.

At the invitation of a prominent St. Mary banana planter I was invited to conduct a series of manurial experiments on his property. It is becoming more and more apparent that the soils of St. Mary no longer have that splendid productive power which they exhibited some years ago. This is not to be wondered at when one remembers that these soils have been cropped for the last 40 years without cessation. No systematic method of return to these soils of the necessary organic matter takes place, or the replenishing of plant foods. Highly necessary and valuable work lies before the Department in this direction. A start has been made and I expect increasing demands for our services.

P. W. Murray,
Superintendent of Agriculture.

Report of the Plant Breeder on the Experiment Station for the year ending 31*st December*, 1925.

Canes.—The demand for cane tops this year has not been as large as in the past three years, 199,102 being distributed, most of which were seedling varieties. The reduction in the number of tops distributed this year is due to the fact that the districts in which Mosaic Disease was prevalent have now been planted with the Uba cane and there was but little demand for this cane this year. It is estimated that there are about 6,000 acres now planted in Uba cane. Another reason for the small number of tops distributed from the Experiment Station this year is that there are two nurseries in Clarendon from which tops of the Uba cane were supplied.

Again this year the demand for B.H.10 (12) has been large and the cultivation of this variety is being increased to meet the growing demand. The plot of B.H.10 (12) which was planted in the old mango grove was cut and distributed during November and December last year. The ratoons were cut and distributed during November and December this year and it is estimated that the ratoons yielded about 40 tons per acre.

There are also three other varieties, viz., Ba.11569, Mexican Striped and Badila, all of which are in great demand. The cultivation of these varieties is also being extended.

The cultivation of the three Uba hybrids remaining from those obtained in 1922 was extended, but these have proved inferior when compared with other varieties. None of the seeds of the inflorescences fertilized last year germinated and another attempt has been made this year to cross-fertilize the Uba with other good varieties on the Northern Estates, but at the time this was being done the weather conditions were adverse to this work. Heavy rains and high winds continued throughout the operation. The Uba flowered sparsely this year and it was only on the northern part of the Island that Uba arrows were found in any quantity to carry out this work.

The following varieties have been imported and planted at the Government Laboratory under quarantine:—

Kassoer, Tekcha, Oshima, Kavangire, Toledo, Tjepiring, 213 P.O.J., 228 P.O.J., 234 P.O.J., 826 P.O.J., 979 P.O.J., 2379 P.O.J., 2714 P.O.J., 2725 P.O.J., 2727 P.O.J.

The following varieties also were sent us by Dr. Zell, Cuba:

Kassoer, Gral Betancourt, Merthi, Yellow Caledonia, C.H. 64 (21), S.C. 12 (4), C.35, H.109, C. 553, 2714 P.O.J., 2725 P.O.J., 2727 P.O.J.

Bananas.—During the year the old China Banana and Gros Michel plots were dug out and the following varieties replanted:—Robusta, Ram Kela, White House, Apple, China and Gros Michel. All the varieties mentioned in last year's report as planted out for cross fertilization experiments have fruited. An attempt was made to pollinate the various varieties but results were obtained only when using the pollen of the Kewensis, a seeding variety as the male parent on the Ram Kela and the Green or Reverted form of Ram Kela as females. From these 232 seeds were obtained and as yet five seeds have germinated. The period of germination has varied considerably from 22 days to 178 days giving an average of 72 days. Fertilization is continued as flowers become available and it is hoped that a fertile lot of seed will be obtained during the spring months as it appears that this season of the year is, in this district, the most successful for this work.

Pines.—A good crop of Pine-apples was obtained and a fair price secured. The cultivation has been extended by one acre which now makes a total of three acres. The new area has been planted with the Ripley and China or Cheese varieties.

Mangoes.—This year was a very favourable one for budding and quite a large number of the common mango trees were budded with the Bombay. One of the new varieties, Goa Alfonse, fruited this year for the first time but the flavour of the fruit is not considered as good as the Bombay.

Cacao.—The usual care was taken of the Cacao plot and owing to the rainfall being so well distributed throughout the year the plants did not suffer although the rainfall was below the average.

Coffee.—Most of the old long top coffee trees were dug out and supplied with young plants.

Guava.—The guava plot was dug out as a result of the fruit being attacked by the fruit fly which was a source of danger to the mango crop which is of more importance.

Agricultural Education.—The Students of the Farm School continued to visit the Experiment Station and receive instruction in the various crops mentioned above. They have done practical work in forking, pruning, mulching, draining, ploughing, preparing and applying fungicides and insecticides, budding, etc. They have also done the greater portion of the work of cross fertilizing of bananas on which they are very keen.

Mr. L. A. Powell, the master in charge of the students in practical agriculture, has taken a keen interest in this part of his work.

M. S. Goodman,
Plant Breeder.

IV.—CONTAGIOUS DISEASES OF ANIMALS.

Report of Government Veterinary Surgeon.

1. On Jan. 11th, I returned to my substantive duties as Government Veterinary Surgeon after completing post-quarantine surveillance of the foot-and-mouth affected areas in the western parishes. During the Easter and Mid-summer Terms I lectured on veterinary subjects in the Farm School, until sent to Westmoreland on May 29th because of a recurrence of foot-and-mouth disease in the parish.

II. *The Recurrence of Foot-and-mouth Disease.*—After 17 months of freedom from this infection a recurrent outbreak appeared on May 29th at Belleisle Estate, whence it was spread by the movement or straying of affected cattle to Fontabelle and George's Plain.

By slaughtering all the members of the infected groups and isolating other cattle the outbreak was suppressed on these estates as from the 10th June.

On July 15th a second outbreak was reported at Shrewsbury Estate, where due to the many uncertainties presented by the situation slaughter was not carried out. In lieu thereof drastic quarantine of the premises was employed, the affected herd carried through the storm of infection and the disease confined to its original limits.

The circumstances of the recurrence at Belleisle suggest that the outbreak is probably assignable to "carriers" affected with the disease in a mild or atypical form during the December, 1923, reccurrence at Fontabelle, Belleisle or so affected subsequently.

The appearance of infection at Shrewsbury, as reported on July 15th, was at first suspected to be connected with a movement of 30 steers from George's Plain to Cornwall on or about June 1st and the incidental exposure of the Shrewsbury herd to these animals. As fuller investigation of this theory weakened rather than supported the evidence it is not possible to trace clearly the origin of the occurrence at Shrewsbury.

Under Slaughter Orders 162 cattle, 62 swine, 1 goat were destroyed on the actually infected places.

During the campaign Belleisle, Fontabelle, George's Plain, Three Mile River, Frome, Paul Island, Shrewsbury, Cornwall and the adjoining districts of Hertford and Petersfield were quarantined as Infected Places, although Belleisle, Fontabelle, George's Plain and Shrewsbury were the only properties upon which actual infection was found. In connection with these a quarantined area was maintained for 6 months, the schedule of which was varied as occasion demanded and as set forth in Gazette Extraordinary of June 4th, 13th, 30th, July 30th, October 3rd, 1925.

During the year five reported cases of suspicion of this disease were reported with negative results at Holland near Falmouth, Lilyfield in St. Ann, Belretiro in Manchester, Green Castle in St. Mary, and Terra Nova in Portland.

III. *Anthrax.*—1. Reports of sporadic cases of Anthrax around Montpelier and Santa Cruz, St. Elizabeth, led me to investigate the conditions. On no occasion was I able to secure material for proper investigation or verification of these representations.

2. On May 3rd, Anthrax was reported and definitely diagnosed at Lloyd's Pen, St. Catherine. As result prompt vaccination of the cattle and mules of the affected property, Bushy Park and Amity Hall was executed. The mortality of 10 cattle was less than 0.1%.

3. Early in September, Golden Grove, St. Thomas, exhibited Anthrax infection in a limited degree. Here vaccination and segregation checked the outbreak with the small mortality of 5 head—less than 2%.

IV. *Red Water or Hæmaturia of Cattle in Manchester.*—No progress has been made in determining the cause or discovering a successful method of treatment for this disease.

Attempted treatment with tartar emetic introvenously as carried out in 1924 and 1925 has failed to give satisfactory results.

V. *Tuberculosis.*—Follow up tuberculin tests were applied to 76 young cattle at the Government Farm, Hope, on November 20th and December 21st, with negative results, thus maintaining the status of the herd's freedom from this disease.

VI. *Tick Control by Dipping.*—Prior to taking charge of the recurrence of foot-and-mouth disease in Westmoreland I endeavoured to organize the dipping of cattle within driving distance of the tanks at Hope, Mona and King's House. Results were most discouraging and objections of many kinds raised against driving the cattle to the dips.

During the year nine additional tanks have been registered in the Department, making a total of 258 Registered Tanks.

VII. *Inspection of Exported Animals.*—March 13th and 27th: 2 bulls, 6 cows to Guatemala.
May 26th: 2 horses, 27 cattle to Santiago de Cuba.

VIII. *Inspection of Imported Animals* (Law 24, 1890)—8 horses from England; 1 bull from U.S.A.; 4 bulls from England; 37 dogs, all from England.

S. Lockett, V.M.D.,
Government Veterinary Surgeon.

V.—PLANT DISEASES AND PESTS.

Report Advisory Committee on the Banana Industry.

The members of the Board during 1925 were:—J. R. Johnson, Esq., S. S. Stedman, Esq.; The Hon. J. H. McPhail, R. P. Simmonds, Esq.; J. Barclay, Esq.; C. J. Veitch, Esq.; The Director of Agriculture, The Govt. Entomologist, The Supt. Inspector of Plant Diseases, and the Microbiologist (Secretary).

During the year Mr. Veitch resigned from the Board, having left the island.

Six meetings of the Committee were held during the year.

The most important matter dealt with during the year was the question of the Panama Disease of Bananas. In April the Committee recommended revision of the Plant Disease Law, a more liberal scale of compensation to small cultivators whose holdings had become affected with the disease, and an increase in the staff of Inspectors of Plant Diseases. After an interview with His Excellency the Governor, these recommendations were placed before the Legislative Council and approved.

Towards the end of the year it became evident that the disease had reached large proportions in certain districts of Portland, and that the form of treatment being carried out was there threatening to kill out the area under banana cultivation as fast as the disease itself.

After an interview at Port Antonio with a deputation of the banana cultivators of Portland, the Committee recommended certain modifications of the standard form of treatment, to be adopted in the parish of Portland. These recommendations were submitted to the Government and approved. Essentially they consist of a reduction in the area quarantined for each case of disease from 1 square chain to one quarter of a square chain in area.

A new Order was published dealing with the control of the movement of Banana Trash, which is now recognised as one of the most important agencies in the spread of the disease from district to district.

The official figures for cases of this disease treated during the year 1925 are as follows:

Month.	Diseased Plants.	New Cases.	Recurrences.	Total Cases.
January ..	1,084	126	360	486
February ..	1,132	99	374	473
March ..	1,101	138	568	706
April ..	910	92	450	542
May ..	1,220	184	532	716
June ..	864	154	467	621
July ..	1,230	224	448	672
August ..	1,184	181	500	681
September ..	1,316	180	476	656
October ..	1,406	132	524	656
November ..	1,156	143	506	649
December ..	1,596	174	671	845
Total 1925 ..	14,199	1,832	5,871	7,703
Total 1924 ..	6,698	620	2,391	3,011

Of the cases treated during the year about 75% were in the parish of Portland. During the year the disease spread to the hitherto free districts of Trelawny, Linstead, Bog Walk and Lower St. Catherine.

C. G. Hansford,
Microbiologist and Secretary to the Committee.

Report of the Government Entomolgisst.

During the period under review I was off duty on sick leave for one month and on vacation leave for four months. A part of the latter was devoted to study at the Massachusetts Agricultural College, U.S.A.

The insects of economic importance dealt with during the year are referred to under their food plants.

Banana.—The situation with regard to the Banana Borer, *Cosmopites sordidus*, Germ, continues to improve, greater care being shown by both large and small growers of bananas in trapping and the destruction of old corms. So far as I know this insect has not spread to, or been introduced by human agency, into new localities. I have seen this beetle hiding at the base of the leaves of cocoes (*Xanthosoma sagittifolium*), but I have seen no evidence of its feeding on this plant; it may be possible to put the fact that it is attracted to this plant to some practicable assistance in the control of the pest. The demonstration plots at Balcarres, Glengoffe and Russell Hall, established with the object of demonstrating the measures which should be adopted in order to control the pest, have, in my opinion, justified themsselves. All of these plots were selected with a view to putting my recommendations to severe test, selecting badly affected areas and ares in which no, or but little cultivation had been practised. Of these plots, that at Russell Hall, under the care of Mr. Banks, Agricultural Instructor, is undergoing the severest test, but after a few months only one larva has been found, and according to the owners' statement, my recommendations have resulted in the increase of the size of the bunches of fruit from four hands to nine. At the Balcarres plot, supervised by Mr. Martin, Agricultural Instructor, in exactly one year the number of adults attracted to the traps has been reduced by 75% and the size of the bunches has also been increased. The plot at Glengoffe, under Mr. Hanson, Agricultural Instructor, has also been carefully looked after and after several months only one beetle was found, though, no examination of the corms was made by cutting. I wish to record my appreciation of the interest taken and the thoroughness shown by the above-mentioned Agricultural Instructors, and also by Dr. Edwards, the owner of the Russell Hall plot. Mention is made below under "Insecticidal Experiments" of certain experiments which are being conducted against the Banana Borer at Whitehall, in connection with which I wish to thank Mr. Roy Johnson, Planting Attorney, Atlantic Fruit Co. and Mr. Melville, the Manager, for having unreservedly placed plots at my service.

With regard to the investigations conducted by me on the invitation of the United Fruit Co. at Santa Marta, Columbia, on the beetle, *Colaspis hypochlora*, which was causing such considerable damage by scarring the fruit, Mr. Veitch, Superintendent of Farms, Jamaica Division, has forwarded me a report in which it is stated, as a result of the campaign against this insect, that the quantity of beetle-scarred fruit has been reduced by 80%.

Sugar Cane.—Judging from the information I have been able to gather, the Sugar Cane Moth Borer, *Diatraea saccharalis*, F., was not very greatly in evidence, probably owing to the fact that during the previous year a large percentage of the eggs of the moth was parasitised by the wasp, *Pentarthrum minutum*, (Riley).

On several occasions the Sugar Cane Mealy Bug, *Pseudococcus sacchari*, (Ckll.), were observed attacking sugar cane. This mealy bug is seldom found on the Uba variety.

One very bad attack on Uba cane by the Sugar Cane Yellow Aphid, *Sipha flavus*, (Forbes), was reported and investigated.

Larvae of two species of *Cirphis*, *C. latiuscula*, H. Sch., and *C. humidicola*, Guen., were observed feeding on the leaves of sugar cane.

Coconut.—Specimens of the *Rhinoceros* beetle, *Strategus titanus*, (F.), were submitted from one coconut plantation.

Tobacco.—Specimens of the Flea-beetle, *Epitrix parvula*, F., attacking tobacco were submitted from Trelawny.

Pimento.—Specimens of the scale insect, *Froggattiella pimentæ*, Newst., and of the White Fly, *Aleurodicus pimentæ*, Lg., were received from Manchester.

Corn.—Complaints were received of the attacks by "White Ants" and leafhoppers, *Tettigoniella* Sp., on this crop.

Citrus.—There is nothing new to report with regard to the Purple Scale, *Lepidosaphes beckii*, (Newm.), and the Snow Scale, *Pinnaspis (Hemichionaspis) Minor*, (Mask.), which continue to be the most serious pests of our citrus.

Specimens were submitted of the Cotton, Aphid, *Aphis gossypii*, Glov., attacking sour oranges.

Specimens were received of the Citrus Black Fly, *Aleurocanthus woglumi*, Ash., which were attacked by the fungi, *Aschersonia goldiana* (Red Fungus), *Aegerita webberi* (Brown Fungus), *Podonectria cocciola*, and *Sphaerostilbe aurantiicola*. I am indebted to the Microbiologist for the identification of these species.

Sweet Potato.—Tubers infested with the weevil, *Euscepes batatæ*, Waterh., were submitted from Trelawny.

Miscellaneous.—Samples of banana figs attacked by grubs were submitted. These grubs proved to be the larvæ of the beetle, *Silvanus surinamensis*, (F.), which evidently gain access to the finished product during packing operations or when exposed on sale.

Insecticidal Experiments.

The following insecticides were presented by their manufacturers for experimental purposes:—

Tanglefoot Cattle Spray.—The manufacturers, The Tangle Foot Co., Grand Rapids, Michigan, U.S.A., claim for this insecticide that it repels flies from cattle, stating that while the mist of the spray, made with a hand sprayer, is in the air, if the cattle are sprayed in an enclosed state, or if the air outside is quiet, flies coming in contact with the mist are killed; and, further, that it prevents flies from alighting on sprayed cattle. The results of an experiment conducted in the open showed that when the sprayed animals were penned with unsprayed animals the flies alighted on the sprayed animals just the same as on the unsprayed animals; the sprayed animals, however, were somewhat less restless than the others, but this effect soon passed off.

Arsenate of Lead.—The samples were presented by Messrs. Lewis Berger & Sons, Homerton, London. These were found to be of light gravity, enabling the powder to remain in suspension for a considerable period ensuring even distribution.

Paris Green.—The samples were also presented by Messrs. Lewis Berger & Sons, Ltd. Experiments proved that owing to the low gravity the insecticide remained in suspension a long time, that owing to the low percentage of soluble arsenic it did not "burn" the foliage, and that it spread over the foliage readily and evenly.

L & V Fluosilicate Dusting Powder.—Two samples of this insecticide, light and very light, were presented by Messrs. Jungmann & Co., 5 Desbroses St., New York City, U.S.A. These proved effective against the caterpillars of *Mocis repanda*, (F.), and they were also effective against cockroaches when dusted in their haunts.

Fly-Tox.—Samples were presented by the Toledo Rex Spray Co., Toledo, U.S.A. This liquid when sprayed in a closed room proved very effective against flies, killing very quickly.

Sunoco Spray Oil.—Samples were presented by the Sun Oil Co., Philadelphia, U.S.A. This is a heavy miscible oil. It proved effective, though a second application is necessary, against the Purple Scale (*Lepidosaphes beckii*) and the Snow Scale (*Pinnaspis minor*), which are the most serious pests of our citrus, and against the West Indian Peach Scale (*Aulacaspis pentagona*), which attacks mulberry, papaya, oleander, peppers, etc. The Purple Scale in particular, is extremely resistant to contact insecticides, and, consequently, it is pleasing to meet with an effective spray.

Wool Soap.—The sample was also presented by the Sun Oil Co. This is also a heavy miscible oil, stated to consist very largely of a petroleum soap material. It also proved effective against the above-mentioned scale insects and in addition against Thrips and the Citrus Black Fly. Both this and the above oil can be safely used with Bordeaux Mixture and at double the strength that they can be safely used alone. Neither can be used with lime-sulphur mixture, but they will emulsify with a soda sulphur.

Cyanogas Calcium Cyanide Citrus Dust.—The sample was presented by the American Cyanamid Co., Five Eleven Fifth Ave., New York City, U.S.A. This is a fine dust stated to contain calcium cyanide 30 to 37.5%, and sulphur 25%. Experiments were conducted against the Aphid, *Myzus persicæ*, (Sulz), which attacks cabbage, and against the Citrus Black Fly. It proved effective against the Aphid, but not markedly effective against the latter, owing, probably, to the fact that the adults of the Citrus Black Fly are easily disturbed and readily take to flight. Judging from the results obtained by investigators in California against the California White Fly this substance should prove a valuable fumigant when used under a tent against the Citrus Black Fly.

Paradichlorobenzene.—This was purchased from the Castner-Kellner Alkali Co., Ltd., 257 Royal Liver Building, Liverpool. This soil fumigant has given good results against root-grubs in Australia. Experiments are being conducted with it against the banana borer.

"Seekay."—The sample was presented by the Castner-Kellner Alkali Co., Ltd. This is crude dichlorobenzene in the form of a dry meal, insoluble in water and non-poisonous. It is claimed that it acts exactly as does Paradichlorobenzene. Experiments against the banana borer are also in progress.

The Insect Collection.

Additions have been made of several species not previously represented in the collection, and some of these species, notably *Diptera* and *Hymenoptera*, have proved to be new to Science.

I am indebted to Dr. Guy A. K. Marshall, C.M.G., Director, Imperial Bureau of Entomology, for the identification of a large number of specimens.

PUBLICATIONS.

Bulletin 4—Catalogus Insectorum Jamaicensis. (In press).

TOURS.

Nine trips were made into the country; two to lecture on the Banana Borer, and seven to investigate attacks by insects.

C. C. GOWDEY, B.Sc., F.E.S.,
Government Entomologist.

REPORT OF THE MICROBIOLOGIST.

Plant Diseases in Jamaica, 1925.

Bananas.—Panama Disease: Again during the past year this disease has proved by far the most important plant disease in the island. The official returns of the cases treated during the year are given under the report of the Secretary of the Advisory Committee on the Banana Industry.

In the field the importance of banana trash as an agent in spreading the disease into new districts has been demonstrated again, as all the cases found in the new district of Linstead were directly traced back to this cause, the trash having been deposited there from other districts. Consequent upon this the Banana Trash Order has been revised, and a more efficient control of the movement of banana trash from district to district has been evolved. Even now it is a question as to whether or not the Order is sufficiently comprehensive.

In spite of repeated warnings to the public the indiscriminate planting of banana suckers regardless of their origin still continues, and is responsible for a very high proportion of the cases treated, and for much of the spread of the disease into the newly planted cultivations in Portland. The increased spread of the disease among the old cultivations in the valleys of Portland has resulted in a general migration of the cultivations to [illegible] and Rhug [illegible] suckers obtained from their old cultivations on the levels.

The floods of November, 1924, appear to have been responsible for some of the spreading of the disease on the lower levels, and some of these have now been completely abandoned for banana cultivation. Owing to the continuous spread of the disease it became imperative to modify the methods of treatment hitherto adopted, especially in the case of the more badly affected parts of the island, as the large area quarantined [illegible] districts with very rapid extinction. The area of quarantine was reduced in such districts to one square chain, instead of the [illegible] prescribed by law. Towards the end of the year it became evident that even this treatment must be further reduced.

An experimental method of treatment has been carried out on a property in Portland under the supervision of the officers of the Department, where the quarantine area has been reduced to 8 roots immediately adjacent to the diseased plant. This treatment has been continued for a period of two years, with the result that though a large number of cases have been treated, there is still a considerable proportion of bananas saved, which otherwise would have been destroyed had the full treatment been used.

Experiments have also been started during the year on other forms of treatment of this disease, and these will be continued during 1926. Up to the present the Department has been unable to improve upon the methods in use for the last few years, i.e., digging up the diseased plant, burning this completely, and destroying the neighbouring plants by digging up and chopping into small pieces. Though various other methods of destroying the diseased material have been tried by the Department from time to time, we have not succeeded in improving upon the above as a method for general use, and no other method tried has proved as reliable as this.

During the year a private gentleman patented a method for the removal of the infection of the disease from the soil, and a number of experiments has been carried out by him under the supervision of the Department, with a view to testing out the efficiency of his treatment. The examination of a considerable number of soil specimens has been carried out by the Microbiologist in connection with these experiments. Two old Panama Disease plots have been replanted with healthy bananas after treatment by this method. Definite data as to the effectiveness of the treatment are not yet to hand, but a pronouncement on this point should be possible at the end of the next year.

The laboratory inoculation experiments commenced in 1925-1 were continued during the year, and other series were started. The results of these have proved that the *Fusarium* responsible for the disease is carried by banana trash taken from infected plants, and that the addition of lime to the soil has little or no effect upon infection.

The progress of the work in raising bananas from seed, in the hope of obtaining a variety resistant to Panama Disease is reported elsewhere. There is no doubt that the only ultimate solution of the problem of Panama Disease is the discovery or production of a resistant variety of banana suitable for commercial purposes. Two varieties known to be resistant to the disease were imported during the year —the Giant Fig from Grenada, and the Dwarf from Surinam. These will be grown in nurseries and used as parents in the pollination work being carried out on bananas.

Other Banana diseases.—The various diseases previously reported in Jamaica are still present here, but the damage done as compared with the Panama Disease is negligible. The *Marasmius* rot of the rhizome does some damage in the cultivations in the John Crow Mountains, where the very wet climate and the conditions of the cultivations favour the disease. More frequent cleaning of the growth of bush, etc., from among the bananas would reduce the loss. The "Black Spot Disease" due to *Cercospora musarum*, Ashby is still prevalent in one or two districts. It is greatly favoured by poor soil conditions. The Bonnygate disease caused by *Sphaerostilbe musarum*, Ashby, is mostly confined to a few districts,

and is favoured by wet conditions and growth of grass and bush in the cultivations. When the cultivation is cleaned of this growth, the infected plants dug out and the holes limed, this disease can be kept under control. The Heart-Leaf Rot is of sporadic occurrence in banana plantations, and little loss is occasioned by it. Its cause is still not known, as I have been unable to obtain an organism from the disease capable of causing similar symptoms when inoculated into healthy bananas. The Pineapple disease (*Thielaviopsis paradoxa*) is reported occasionally but causes little damage.

Several of the specimens received during the year, as being suspected of Panama Disease, were found to present a water-soaked appearance in the bulb, with no internal symptoms of Panama Disease. The Inspectors of Plant Diseases have noted a considerable number of these plants during the year. An examination of the tissues has not yielded any organism which could be considered as the cause of the trouble. At a late stage the tissues break down and are invaded by bacteria, causing a soft spongy rot, but these are evidently of a secondary nature. It is considered that the trouble is connected with excessive waterlogging of the soil, especially on heavy clay soils.

Sugar Cane.—Mosaic Disease: The campaign against this disease has been conducted by the Superintendent of Agriculture. One interesting fact has been brought out during the last two years, namely, that the "Fall Plants" are not attacked to the same extent as the "Spring Plants." This is also the case in Cuba, according to a recent publication. Thus by planting new fields only in the fall of the year the proportion of canes rogued out on account of mosaic infection during the first crop is considerably reduced.

At the commencement of the year experiments were carried out with *Aphis maidis* as a vector of the disease. The results proved that this insect was capable of transmitting the disease from corn to cane and from cane to cane. At the same time it must be admitted that sugar cane is not a natural host of this aphis, which prefers other plants such as corn and Guinea corn. There is a great discrepancy between the laboratory results with insect vectors of this disease and field experience. In the laboratory it is very difficult to get this aphis to transmit the disease from plant to plant, yet in the field, under certain conditions not at present well understood the disease spreads in a wholesale manner. Yet *A. maidis* is still the only insect definitely proved a carrier of this disease, though certain other insects have been reported from time to time, but on insufficient grounds. These have not yet been confirmed as carriers, and are only under suspicion at the moment.

The appearance on Elephant Grass (*Pennisetum purpureum*) which was formerly suspected of being Mosaic Disease, is now considered to be a peculiarity of this species, and in Porto Rico it has been found to be transmitted to seedlings, being thereby distinguished from Mosaic Disease, which is not so transmitted according to Brandes' latest papers on the subject.

A number of new varieties of cane were imported during the year from Washington, Cuba and Barbados. The consignment from Washington consisted of a number of varieties known to be immune from or resistant to Mosaic Disease. At present these are being grown in quarantine in a special nursery, and will afterwards be tested out on a field scale. Some of them show a certain amount of promise as substitutes for Uba in certain districts of Jamaica which are especially subject to Mosaic Disease.

Other Cane Diseases.—In February a bad attack of *Helminthosporium sacchari*, Butl., on cane was reported on one estate. The young cane-sprouts a week or two old, arising from the old roots cut for the crop, were attacked, and the fungus spread over a large part of the estate on both young and mature canes. This is the only instance where this fungus has been reported as doing any appreciable damage to the crop in Jamaica, though it has been reported as of economic importance in Porto Rico. In the present instance it was apparently much favoured by the cool moist weather at the time.

A number of samples of Uba were suspected of being infected with the Streak Disease described in Natal were received during the year, but no evidence of the occurrence of that disease in Jamaica has yet been seen. The markings on the samples sent in to the laboratory were mostly due to some insect attack. The Uba cane is remarkably free from fungus diseases in Jamaica.

Coconuts.—The coconuts of the island have now recovered from the effects of the long drought of 1923-4, and during the past year the general appearance of the coconut districts has much improved. Very few cases of diseases have been reported during the year. A few cases of Budrot were treated by our Inspector in the western parishes.

Citrus.—Several cases of bad attacks of the Citrus Scab (*Sporotrichum citri*) were reported, especially in young nurseries of sour orange seedlings intended for use as stocks for budding. The disease is favoured here by spells of cool moist weather at the time the trees are sending out new growth.

A case of die-back of grapefruit was investigated during the year, but although the common *Colletotrichum gloeosporioides* was found on some of the dying twigs, it was evidently not responsible for the greater part of the damage. No other fungus was found to which the symptoms could be attributed and it was finally concluded that the soil conditions were largely responsible. Analysis of the soil indicated great deficiency in lime and potash, combined with high acidity. This was remarkable, as the underlying rock, in many places quite near the surface, was limestone. Several of the trees showed a mottling of the leaves, possibly due to deficiency in lime in the soil, which contained a large amount of iron oxide.

Coffee.—One attack of *Ompholia* (*Stilbella*) *flavida* was reported on coffee growing under rather dense shade during the moist weather at the beginning of the year. The die-back due to *Colletotrichum* (? *C. coffeanum Noack*) does some damage to coffee in some districts in St. Thomas. One case of root disease caused by a *Rosellinia* was sent in.

Tobacco.—The Mosaic Disease is of frequent occurrence, but little notice has hitherto been taken of it, and the damage does not appear to be very serious. The "Black Shank" disease caused by *Phytophthora nicotianæ* caused considerable damage to a crop of Virginia tobacco, amounting in one case to some 20% of the total crop. The native tobacco appears to be more resistant to this disease, and it would appear advisable to cross this with the susceptible Virginia in order to obtain a more resistant type of cigarette tobacco.

Mango.—The "Bombay" variety grown at Hope and successfully exported to the British Empire Exhibition has proved rather susceptible to attacks of a mildew (*Oidium* sp.) at the time of flowering. This disease causes the dropping of the flowers and young fruits, and the whole

inflorescence dries up when the attack is severe, resulting in great loss of crop. If this fruit is to be developed on a large scale the control of this disease will be an important factor in production.

Truck Crops.—Potatoes: The Common Scab (*Actinomyces sp.*) is of frequent occurrence in potato growing districts, having doubtless been imported on seed potatoes from temperate regions. The eating qualities of the tubers are not affected, though the appearance is unsightly. An agitation has been started for the inspection of all seed potatoes imported, and an Order has been drawn up for this purpose.

Yam.—A specimen of yam tubers showing a soft brown rot of the surface was received. On examination two fungi were found in the tissues—a *Rhizoctonia* and a *Verticillium.* The former was apparently the cause of the rot, but neither fungus proved capable of reproducing the symptoms when inoculated into healthy tubers under laboratory conditions.

Tania (*Xanthosoma*)—Specimens of tubers attacked by *Vasculomyces xanthosom ae,* Ashby, were received during the year, but this disease seems to be of minor importance.

Tomato.—The leaf diseases caused by *Cladosporium fulvum* and *Septoria lycopersici* cause considerable damage to this crop. Spraying to be effective in controlling these must be frequently and thoroughly carried out, especially in moist weather.

Tours and Lectures.

During the year lectures on Panama Disease were delivered by the Microbiologist at Islington, Belfield, Bensonton, Borobridge, Bog Walk, Great Salt Ponds and Chapelton. Tours of inspection were made to Lititz, Black River, Vere, Golden Vale (Portland) and Serge Island. In company with Dr. J. R. Johnston of the Research Department of the United Fruit Company I inspected the treatment of Panama Disease in Portland, and the general position with regard thereto.

A lecture on Coconut diseases was delivered to the Instructors of the Agricultural Society at Hope in June. The question of Mosaic Disease was also discussed at the same time.

I have to acknowledge my indebtedness to Dr. J. R. Johnston of the United Fruit Co., for advice and help in connection with Panama Disease; to Dr. E. W. Brandes of Washington for help in connection with Mosaic of Sugar Cane, and for a consignment of varieties of cane resistant to the disease; to Dr. Hill of Kew for aid in obtaining varieties of Sugar Cane and Bananas; to Miss Maxwell for mycological specimens; and especially to Mr. J. B. Sutherland, Supervising Inspector of Plant Diseases, for his most valuable aid in co-operation in connection with the campaign against Panama Disease.

C. G. Hansford, M.A. (Cantab.)
Microbiologist.

VI.—AGRICULTURAL EDUCATION.

Report of Headmaster Government Farm School.

Students.—The number of Students resident at the school was as follows:—

Easter Term	27
Midsummer Term	25
Christmas Term	29

The following students completed their course and were awarded Certificates:—

O. M. Heron, Shooter's Hill; P. G. Stona, Buff Bay; A. G. Somers, Stewart Town; H. F. Keen, Kingston; F. A. Morris, Duncans; W. A. Lopez, Retreat.

I am pleased to state that these students have all obtained positions on estates.

Curriculum.—The usual work was carried out.

Staff.—Dr. Tavares acted as Instructor in Veterinary Science vice Dr. Lockett, seconded for special work.

The Headmaster went on four months' leave and Mr. A. F. Thelwell acted in his place.

General.—I am pleased to record that a modern system of sanitation has been installed in the school.

The students rendered their usual assistance to the Stock Farm and the Experiment Station.

Roy S. Martinez,
Headmaster.

Report of Medical Oeficer.

I have the honour to report that during the year ending 31st December, 1925, the general health of the students of the Hope Farm School has been good.

All the new students were injected with anti-typhoid vaccine and vaccinated against Smallpox.

The sanitary conditions are good. The bucket system has been replaced by W.C's. and absorption pits for the staff and students and properly constructed pit closets for the workmen and servants.

Lewis A. Crooks, M.B. & C.M. (Edin.)

VII.—LIVESTOCK.

A.—Government Stud Farm, Grove Place, Manchester.

Live Stock, Grove Place Pen, 1925.

	1	Zebu Jersey Bull
	1	Ayrshire Bull
	1	Aber-Angus Bull
	1	Bull Calf of 1923
	25	Bull Calves of 1924
39	10	Bull Calves of 1925
	165	Native Dairy Cows
179	14	Draft Cows
	9	Pedigree Heifers
	13	Grade Native Heifers
	13	Grade Holstein Heifers
	13	Grade Hissar Heifers
	37	Grade Ayrshire Heifers
	23	Grade Guernsey Heifers
	43	Grade Jersey Heifers
	4	Grade Montgomery Heifers
	25	Grade Red Poll Heifers
	21	Grade Swiss Heifers
	6	Grade Zebu Jersey Heifers
	1	Grade Hereford Heifer
209	1	Grade Angus Heifer
9	9	Working Steers
436		

Horsekind:—

1	Imported Horse "Lembach"
1	Imported Proof Ass "Kentucky Boy"
10	Brood Mares
6	Fillies
1	Colt
2	Geldings
15	Mules
3	Donkeys
39	Head

The following is the Summary of the Valuation of the Live Stock at Grove Place on December 31st, 1925:—

		£	s.	d.
Cattle	.. ..	3,498	10	0
Horsekind	.. ..	984	0	0
	Total Pen Stock	£4,482	10	0
Beef Cattle	.. ..	1,030	0	0
Indian Cattle	.. ..	1,100	0	0
	Grand Total	6,612	10	0

Services of Bulls at Grove Place, Jany. 1st–December 31st, 1925.

Bulls.	Visiting Cows.	Farm Cows.	Total.
Hereford "Peacemaker" ..	14	1	15
Sussex "The Arab" ..	1	..	1
Devon "Rentpayer" ..	6	..	..
Brown Swiss "Trumpeter" ..	12	2	14
Jersey "Sophies Hector" ..	7	20	27
Jersey "Hope Pogis" ..	21	35	56
Jersey "Hon. Mr. Polo" ..	3	6	9
Red Poll "Pilot of Hope" ..	13	..	13
Montgomery "Dairyman" ..	..	8	8
Hissar "Pride of the Punjab" ..	..	1	1
Ayrshire "Cyril"	2	3	5
Ayrshire "Food Controller" ..	12	7	19
Ayrshire "Rubicon" ..	..	1	1
Montgomery-Guernsey "Cortes"	1	18	19
Total	92	102	194

B.—Government Stock Farm, Hope.

Live Stock "Hope Stock Farm," 1925.

	1	Imported Red Poll Bull
	3	Native Red Poll Bulls
	4	Imported Red Poll Cows
35	27	Native Red Poll Cows and Heifers
	2	Imported Jersey Bulls
	4	Native Jersey Bulls
	1	Imported Jersey Cow
39	32	Native Jersey Cows and Heifers
	1	Native Guernsey Bull
	1	Guernsey Stag
	1	Imported Guernsey Cow
7	4	Native Guernsey Cows and Heifers
	1	Imported Ayrshire Bull
	5	Native Ayrshire Bulls
	2	Imported Ayrshire Cows
11	3	Native Ayrshire Cows and Heifers
7	7	Native Brown Swiss Cows and Heifers
	3	Native Nellore Bulls
6	3	Native Nellore Heifers
105		
	6	Grade Montgomery Bulls
	3	Grade Hissar Bulls
	1	Grade Jersey Bull
	1	Grade Red Poll Bull
	102	Dairy Cows
	14	Foster Mother Cows
131	4	Draft Cows
	8	Grade Native Heifers
	4	Grade Ayrshire Heifers
	19	Grade Guernsey Heifers
	6	Grade Hissar Heifers
	10	Grade Holstein Heifers
	43	Grade Jersey Heifers
	21	Grade Montgomery Heifers
	8	Grade Nellore Heifers
	4	Grade Red Poll Heifers
	4	Grade Swiss Heifers
128	1	Grade Zebu-Holstein Heifer
14	14	Plough Steers
378		
	Horsekind:—	
	1	Gelding
12	11	Mules
	Poultry:—	
	2	Pens. Rhode Island Reds and Plymouth Rocks.
	Bees.—	
	Nil	

Weekly Analysis of Milk supplied to the Public Hospital and Lunatic Asylum by the Stock Farm, 1925.

Quarter ending.	Solids.	Fat.	Sp. Gravity	Solids not Fat.
March 31, 1925 ..	12.62	4.38	1.0289	8.24
June 30, 1925 ..	12.36	4.20	1.0287	8.16
September 30, 1925 ..	12.19	4.04	1.0288	8.15
December 31, 1925 ..	12.74	4.48	1.0288	8.26
	12.48	4.28	1.0288	8.20

The following is a summary of the valuation of the Live Stock at the Farm in December, 1925:

Cattle	£8,336
Horsekind ..	211
Poultry ..	37
Bees	nil
Total	£8,584

MILK YIELD, DAIRY HERD 1921, 1922, 1923, 1924, 1925.

Imperial Quarts per diem.

Month.	1921.	1922.	1923.	1924.	1925.
January ..	199.1	283.5	348.4	264.4	304.9
February	291.2	264.5	347.2	238.2	324.0
March ..	338.8	294.9	307.6	249.3	369.3
April ..	338.5	259.6	248.9	224.2	441.9
May ..	309.3	300.1	318.7	271.4	513.7
June ..	304.0	289.8	369.3	337.8	504.1
July ..	299.0	304.3	324.6	376.1	457.9
August ..	288.7	310.5	303.0	356.0	464.0
September	332.8	314.4	320.6	365.6	438.4
October ..	287.8	270.8	270.3	370.4	432.9
November	263.5	296.3	286.8	326.3	393.1
December	269.4	298.0	288.5	314.6	396.7
	293.5	290.5	314.2	307.9	420.1

RECORD OF DAIRY HERD MILK YIELD, 1925.

Month.	Av. No. of Cows.	Total qts. per mensem.	Av. per Cow qts.
January ..	74	9,450.3	4.1
February	77	9,072.8	4.0
March ..	83	11,447.1	4.4
April ..	85	13,257.3	5.2
May ..	94	15,925.7	5.5
June ..	94	15,124.2	5.4
July ..	93	14,194.6	4.9
August ..	91	14,384.2	5.1
September	91	13,153.8	4.8
October ..	92	13,420.6	4.7
November	91	11,791.6	4.3
December	95	12,296.9	4.2
	88	153,522.1	4.7

MILK YIELD, 1925, HOPE DAIRY HERD.

Order.	Cow.	Breed.	Age in years.	Average content Milk Fat	Lbs. of Milk.	Milking Weight Lbs.	Max. yield Imp. Qrts.	Sale value at 8d. per Qrt. £	s.	d.
1	Norbrook 2nd (in 9 mths.)	Grade Holstein ..	6	3.7	6,100	1,048	19.4	78	9	8
2	Fifi ..	Grade Jersey ..	10	3.6	5,878	820	11.7	75	12	6
3	Kara 1st (in 10 mths	Grade Holstein ..	5	3.9	5,682	1,000	23.1	73	2	1
4	Dodo 1st ..	Do. ..	6	3.9	5,626	1,188	17.6	72	7	9
5	Nana ..	Do. ..	8	3.7	5,222	900	10.4	67	3	10
6	Sola 5th ..	Grade Zebu-Jersey ..	6	4.4	5,035	1,080	13.5	64	15	7
7	Lydite ..	Grade Holstein ..	14	4.0	5,011	1,064	10.7	64	9	6
8	Carmen ..	Grade Guernsey ..	11	3.5	4,957	874	11.2	63	15	5
9	Foxy 1st ..	Zebu-Jersey ..	8	3.6	4,928	876	10.6	63	8	2
10	Blossom 1st ..	Grade Zebu-Jersey ..	7	5.5	4,682	870	13.5	60	4	10
11	Ellenstine 2nd ..	Zebu-Jersey ..	8	3.9	4,665	870	12.3	60	0	5
12	Porosa 2nd ..	Grade Red Poll ..	4	3.5	4,477	900	14.1	57	11	10
13	Badge 2nd ..	Zebu-Jersey ..	7	5.5	4,457	886	10.1	57	6	11
14	Fanny 2nd ..	Do. ..	7	4.3	4,443	964	10.5	57	3	4
15	Pobess ..	Grade Red Poll ..	11	3.8	4,329	1,102	14.9	55	13	11
16	Diva 7th ..	Grade Guernsey ..	4	4.1	4,303	680	8.6	55	7	4
17	Freda 1st ..	Grade Holstein ..	5	4.0	4,282	884	10.0	55	1	11
18	Diva 4th ..	Grade Zebu-Jersey ..	8	3.8	4,269	996	9.0	54	18	6
19	Mirage 1st ..	Grade Guernsey ..	5	4.0	4,255	750	9.4	54	14	8
20	Rosette 2nd ..	Do. ..	7	3.8	4,234	992	13.7	54	9	4
21	Pussy ..	Grade Red Poll ..	10	3.7	4,233	890	9.5	54	9	2
22	Pigeon 2nd ..	Grade Brown Swiss ..	4	4.1	4,207	890	7.8	54	2	4
23	Hope Brisk 1st ..	Red Poll ..	6	3.5	4,167	1,030	12.8	53	12	3
24	Monica 6th ..	Grave Brown Swiss ..	4	3.5	4,159	762	8.6	33	10	2
25	Portia ..	Jersey ..	3	3.7	4,144	800	12.3	53	6	3
26	Bunny ..	Grade Holstein ..	8	4.3	4,127	1,260	10.3	53	1	9
27	Hope Beta 3rd ..	Red Poll ..	5	3.6	4,061	830	11.5	52	5	0
28	Baby 1st ..	Grade Jersey ..	7	3.9	4,038	854	9.9	51	19	0
29	Hector's Pansy ..	Jersey ..	7	4.0	4,009	976	8.8	51	11	7
30	Violet 2nd ..	Grade Zebu-Jersey ..	8	3.5	3,987	968	12.8	51	5	11
31	Quail 2nd ..	Zebu-Jersey ..	8	4.2	3,982	816	9.1	51	4	10
32	Monica 12th ..	Grade Guernsey ..	5	4.3	3,969	840	8.4	51	1	2
33	Quail 4th ..	Grade Brown Swiss ..	4	3.6	3,963	762	8.9	50	19	6
34	Desiree 3rd ..	Red Poll ..	4	3.8	3,925	990	14.3	50	9	10
35	Pet 1st ..	Grade Zebu-Jersey ..	6	4.4	3,894	820	12.2	50	1	8
36	Shrew 11th ..	Grade Guernsey ..	6	4.3	3,885	922	10.8	49	19	7
37	Paste ..	Zebu-Jersey ..	4	4.9	3,786	800	9.9	48	14	2
38	Dolly 1st ..	Grade Brown Swiss ..	4	4.7	3,751	850	7.6	48	4	11
39	Diva 2nd ..	Grade Zebu-Jersey ..	10	4.7	3,664	964	11.0	47	2	8
40	Hector's Gem ..	Jersey ..	6	4.0	3 643	750	8.1	46	16	9
41	Monica 1st ..	Grade Zebu-Jersey ..	10	4.5	3,599	920	10.1	46	6	1
42	Quail 21st ..	Zebu-Jersey ..	5	5.0	3,583	714	7.8	46	2	0
43	Quail 11th ..	Do. ..	6	4.6	3,576	778	8.9	46	0	4
44	Monica 3rd ..	Grade Zebu-Jersey ..	8	4.0	3,572	916	10.6	45	19	3
45	Cordite 22nd ..	Grade Jersey ..	3	4.4	3,559	660	7.5	45	15	9
46	Diva 22nd ..	Grade Guernsey ..	3	3.7	3,544	670	7.4	45	11	11
47	Ethelstine 2nd ..	Jersey ..	3	4.6	3,538	770	9.9	45	10	5
48	Diva ..	Grade Guernsey ..	14	4.3	3,520	766	9.6	45	5	9
49	Casilda 2nd ..	Grade Zebu Jersey ..	7	3.7	3,513	990	5.8	45	4	1
50	Sola 2nd ..	Do. ..	9	3.9	3,494	1,106	7.9	44	18	9
51	Flora ..	Guernsey ..	5	3.5	3,482	800	10.5	44	16	1
52	Hope Bee 1st ..	Red Poll ..	5	3.6	3,465	910	10.1	44	11	8
53	Badge 4th ..	Grade Montgomery ..	3	4.6	3,451	714	9.1	44	8	0
54	Mystery ..	Grade Jersey ..	4	4.6	3,414	780	9.8	43	18	7
55	Hope Beta 2nd ..	Red Poll ..	7	3.8	3,367	830	7.6	43	6	5
56	Blossom 2nd ..	Grade Holstein ..	5	3.5	3,367	770	10.3	43	5	3
57	May 3rd ..	Grade Guernsey ..	4	3.8	3,313	810	11.3	42	12	4
58	Ada 1st ..	Grade Jersey ..	5	4.1	3,284	780	8.2	42	5	1
59	Shrew 3rd ..	Grade Brown Swiss ..	4	4.0	3,260	990	7.1	41	18	9
60	Brown Blossom ..	Ayrshire ..	9	3.8	3,178	984	9.9	40	17	2
61	Cora ..	Guernsey ..	5	4.2	3,169	956	8.4	40	15	5
62	Rosette 4th ..	Grade Guernsey ..	4	3.9	3,168	766	7.0	40	15	2
63	Hope Pansy 1st ..	Jersey ..	6	4.0	3,126	870	9.3	40	4	3
64	Monica 7th ..	Grade Guernsey ..	3	4.6	3,114	834	9.7	40	0	8
65	Timorette 3rd ..	Zebu-Jersey ..	4	4.1	3,040	690	6.9	39	12	0
66	Plato's Cigarette ..	Grade Guernsey ..	5	4.4	3,036	800	6.8	39	11	0
67	Norbrook ..	Native ..	11	3.6	3,001	1,072	5.0	38	12	3
68	Melinite ..	Grade Zebu Jersey ..	8	4.8	3,000	846	4.4	38	11	10

"Norbrook 2nd" gave 16,521 lbs. milk in first lactation extending to 572 days value £212 11s 3d.

VIII.—GOVERNMENT LABORATORY.

Report of Deputy Island Chemist.

The total number of samples examined was 1,800, being 6 samples more than last year. The samples are classified as under:—

"A." Official.

(1) *Police*—				
Human viscera and organs				17
Vomits				1
Substances examined for poison				60
Medicines and Drugs				1
Counterfeit coins				85
Genuine coins				41
Arson exhibits				31
Ganga				15
Counterfeiting exhibits				54
Animal viscera for poison				1
Miscellaneous				2
Under the Drugs and Poisons Law:—				
Chemicals				1
Beverages				9
Under the Petroleum Laws:—				
Kerosines				23
Gasoline				1
Under the Spirit License Law:—				
Spirits				6
Wines				3
Under the Medical Law:—				
Medicines				13
Under Foods and Drugs Law:—	Genuine.	Adulterated.	Total.	
Fresh milks	8	nil	8	
Total Police				372
(II) *Customs*—				
Native Wines				47
Rectified Spirits and Abs. Alcohols				22
Fuel Oils				14
Gasolines				3
Disinfectants and Insecticides				3
Flavouring extracts				3
Condensed and dried milks				11
Essential oils				1
Denatured alcohols				2
Spirituous compounds				2
Miscellaneous				5
Under Government Sugar Test:—				
Sugars				23
Total Customs				136
(III) *Department of Science and Agriculture:*—				
Feeding Stuffs				3
Condensed milks				4
Insecticides				5
Butter				1
Milk				3
Kerosine				1
Dyestuffs				5
Total				22

(IV) *Public Works Department*—	
Clays	2
Steel	1
Waters	3
Total	6
(V) *Government Railway*—	
Cylinder Oils	1
(VI) *Is and Medica Department*—	
Condensed Milk	1
Waters	4
Substances examined for poison	89
Total	94
Total Official	631

"B." Agricultural.

Soils and sub-soils	17
Canes and juices	27
Fruits	4
Total	48

"C." General.

Stock Farm milks	678
Cattle Dips	78
Sugars	58
Rums	131
Waters—potable	40
boiler feed	1
mineral	4
Fresh milks, private	9
Animal viscera for poison	2
Substances for poison	9
Minerals and ores	6
Steam coals	8
Oils—essential	4
fuel	4
fixed	2
Medicines and herbs	4
Lard and lard substitutes	6
Gasolines	4
Cocoa	4
Alcohols	4
Copra	12
Limes and marls	6
Wines and spirits	6
Salts	10
Washes for rum manufacture	6
Miscellaneous	25
Total General	1,121
Grand Total	1,800

Official Samples.

The 17 analyses of viscera and human organs were made in connection with 9 deaths. In 5 cases poison was found and recovered from the viscera as follows:—

(1) 0.03 grains of Aconitine from the organs of a female adult.
(2) 0.25 grains of Aconitine from the organs of a female child.
(3) 0.9 grains of Arsenious oxide from the organs of a female adult.
(4) 1.7 grains of Strychnine from the organs of a male suicide.
(5) 4.25 grains of Potassium cyanide from the organs of a male suicide.

Substances examined for poison which yielded positive results are as follows:—

(1) 83 grains of powdered glass in a cup of tea.
(2) 90 grains of Arsenious oxide in a tumbler of milk.
(3) One grain of Cocaine hydrochloride in a powder.

(4) 0.05 grains of arsenious oxide in a child's vomit, taken from the Rio Cobre Home.
(5) Two loaves of bread, each conttining 0.07 grains of arsenious oxide per ounce of bread. Spanish Town poisoning case.
(6) Salt contaminated with arsenic to the extent of 1%.
(7) One loaf of bread from Chapelton contained 0.07 grains of Arsenious oxide per ounce of bread.
(8) One sack impregnated with Arsenite of Soda equivalent to 1,655 grains of arsenious oxide.
(9) Five sacks of salt containing Arsenite of Soda in varying quantities.
(10) One powder containing arsenious acid and barium carbonate.
(11) Two Rums containing 1.5% of vegetable "Bitters."
(12) 5 salts containing Arsenite of Soda.
(13) 0.28 grains of lead in beer.
(14) 0.21 grains of lead in beer.
(15) Roasted breadfruit containing yellow phosphorus derived from a rat poison.
(16) 2.9 grains arsenious oxide in the viscera of a goat which was suspected of being maliciously killed.
(17) Traces of Strychnine sulphate in an apparently empty chip box.
(18) 3 grains of arsenious oxide in a cooking pan.
(19) Large traces of Arsenic in cooked foodstuffs.
(20) Powdered glass in sweetmeats.

The total number of substances examined for poison amounted to 150 samples, which constitutes a record.

There were two outstanding cases of attempted wholesale poisoning the most prominent being that which occurred at Spanish Town at the end of May, 1925. Over 200 persons suffered from arsenical poisoning, and one fatality was recorded. Arsenic was first detected in a specimen of vomit which was sent by Dr. Campbell from the Rio Cobre Home for Children. Subsequent examination of various foodstuffs indicated that the bread contained Arsenic, and within a short time the poison was traced to the salt which had been used in making the bread. The premises on which the bread was baked were inspected by the Deputy Island Chemist and His Honour Mr. J. V. Leach, the Coroner for St. Catherine, and the deductions made by the former were amply verified for the inspection, and subsequent analysis of samples taken on the spot, clearly proved that a solution of Arsenite of Soda had been poured over the bags which contained salt. In spite of a most searching enquiry the prepetrators of this crime were not discovered.

The second case occurred on Pembroke Estate near Falmouth when 19 persons were affected by arsenical poisoning. Fortunately no fatalities were recorded. It is hoped that further light will be thrown on this case in the near future.

Experiments were carried out with various dye-stuffs to ascertain if Arsenite of Soda could be mixed with a powerful dye which would reveal its presence and act as a deterrent against the use of this poisonous substance for criminal purposes. A suitable dye was found which fulfils the necessary requirements namely:—stability to oxidation and reduction; rapid development of an intense colour on moistening with water; cheapness.

Of 126 coins examined for the Police, 85 were counterfeit whilst 41 were genuine. The counterfeit coins are generally cast in moulds and are made of tin or alloys of tin and lead. The genuine coins consisted chiefly of silver coins of small denomination which were discoloured. It is customary for the country women to tie up their money in their head-cloths, and the acid perspiration which soaks through these cloths adversely affects the colour of the silver coins, especially if nickel coins are also present. Several silver coins which had been rubbed over with mercury were received. A superstition appears to exist in the Island that silver coins which are rubbed over with mercury will "Run" or return to the original owner. The only apparent result is to attract the attention of the Police.

All the discoloured and genuine coins were chemically treated to render them fit for circulation and were returned to the police.

The number of Ganga samples examined was half of the number examined last year. Most of the samples were sent in from the northern coast of the Island. The growing of this drug is usually carried out by East Indians, whilst the retailing is performed by West Indians.

The number of Arson exhibits was 31 as compared with 11 for last year. In one case a conviction was secured and the offender sentenced to a well merited term of imprisonment.

Thirteen samples of medicine were examined under the Medical Law, and three convictions resulted. The medicines consisted of decoctions of herbs such as asafœtida, chenopodium, ginger, aloes, mint, rhubarb, etc., together with alcohol and common drugs.

The number of milk samples under the Food and Drugs Law of 1908 was only 8, whereas 10 were examined in 1924, and 33 in 1923. This falling off indicates an evident reluctance on the part of the Police to take milk samples under this Law for analysis, the reason probably being that the officer taking the sample has to pay for it out of his own pocket.

The number of Customs Samples was 136, a decrease of 42 samples less than last year. This is chiefly due to the fewer number of native wines submitted for examination, the number being 34 less than in 1924.

The increasing importance of Fuel Oil led to a complete revision of the Petroleum Laws which were consolidated in Law No. 22 of 1925 on the 13th Nov., 1925. Oil Fuel was defined, and the maximum Flash Point for petroleum was lowered from 170 degs. Fah. to 150 degs. Fah. Provision was made for turpentine and turpentine substitutes. Specifications for the apparatus and methods of testing oils for the Flash point were laid down in two Schedules to the Law. The First Schedule dealing with the Abel Closed Test Apparatus for oils having a Flash Point below 120 degs. Fah., and the Second Schedule dealing with the Pensky-Martens Closed Test Apparatus for all oils having a Flash point above 120 degs. Fah.

A large number of samples were examined for the Customs with a view to assessment of duty. The Laboratory acts as an impartial scientific referee in cases where doubt exists concerning the classification of articles under the Tariff Law.

Attention has been drawn again to the legal definitions and standards for condensed milk and similar preparations, and steps are being taken to secure effective legislation concerning these important articles of food.

Sugars examined under the Government Sugar test show an increase of 13 samples over the number examined for 1924.

Various feeding stuffs were analysed for the Department of Science and Agriculture including Guinea Corn (*Sorghum Vulgare*).

Certain weedkillers which were examined were found to consist chiefly of sodium perchlorate, either alone or mixed with other ingredients.

An interesting and important investigation was carried out for the Parochial Board of Morant Bay in connection with the corrosion of steel water pipes. This involved a complete examination of various types of clay through which the pipes were laid; analysis of the water and also of the steel pipes and material used for protecting the outer surface of the metal. The cause of the corrosion was traced to the action of certain strata of clay which differed from the clay taken from other parts where there was no corrosion. Various suggestions were made, whereby the trouble could be reduced in future, and embodied in a report to the Board.

The articles examined for the Island Medical Office consisted chiefly of food-stuffs submitted for the detection of poisonous or harmful constituents.

Agricultural.

The number of samples examined under this class is considerably less than last year. The soils examined were in connection with manurial experiments on Sugar Canes.

General.

678 samples of milk were examined for the Government Stock Farm. The standard of quality was good throughout the year, and the Public Institutions benefit accordingly by receiving a high grade supply.

78 Cattle Dips were analysed in connection with various Dipping Tanks throughout the Island.

The number of sugar samples was small, being a little over a third of those examined last year.

Rum samples numbered 131 as against 152 for 1924, and most of these came from one estate.

The water supply for Kingston and St. Andrew was examined each quarter, samples of water being taken at the reservoirs before filtration, and also samples of the filtered water taken from pipes were analysed. The results were entirely satisfactory, and the purity of the supply is well maintained.

Various potable and other waters from other sources were analysed.

Mention should be made of two analyses of mineral waters taken from Rockfort Bath and Rockfort Pool, respectively.

Rockfort Bath.—This is a small bath situated close by the sea at Rockfort on the lands which are under the control of the Prisons Department. The chemical composition was found to be as follows:

	Parts per 100,000
Calcium	19.80
Magnesium ..	13.20
Sodium	85.02
Bicarbonate ..	24.40
Sulphate ..	31.43
Chloride ..	168.00
Silica	4.40
Total	346.25

Radio-activity 8.92 x 10—10 Curies per litre.

Rockfort Pool.—This pool is situated about 150 yards west of the Rockfort Bath. The water flows out of a fissure in the limestone and through a small pool into the Harbour. Its chemical composition was found to be as follows:—

	Parts per 100,000.
Calcium ..	28.04
Magnesium ..	15.60
Sodium	136.84
Bicarbonate ..	85.52
Sulphate ..	38.35
Chloride	229.00
Silica	6.40
Total	539.75

Radio-activity 9.07 x 10—10 Curies per litre.

The water from the Pool is the more highly mineralised of the two, although the Radio-activity is about the same. The taste is brackish and is quite distinct from that of the water which supplies the Bath. This water is stated to have decidedly aperient properties by persons who have taken quantities of it. Use could be made of this water by the Prison Authorities for medicinal purposes by the convicts and others working at Rockfort, and others under the jurisdiction of that Department.

A large number of miscellaneous samples of a varied character were analysed for private persons and commercial houses. These include minerals, fuels, oils, foods, medicines, soaps, copra, etc., etc.

The manufacture and sale of Paranaph for use in registered Dipping Tanks was continued during the year in addition to the sale of Arsenite of Soda and other substances. The following table gives a list of materials supplied to the public with the amounts issued. Figures are given for the past three years for comparison.

	1923.	1924.	1925.
Paranaph ..	31,689	27,128	26,541 lbs.
Arsenite of Soda ..	19,442	15,786	15,653 lbs.
Copper Sulphate ..	224	307	154 lbs.
Carbon Bisulphide ..	469	480	658 lbs.
Rat poison bulk ..	183	105	234
Rat poison, 1oz. packets	137	160	189 lbs.
Standard Iodine solution	45,000	36,200	31,250 ccs.
Thymol powders ..	507	242	337 ozs.

Six complete Dip testing outfits were issued to owners of Registered Dipping Tanks, whilst numerous small orders were filled for a variety of Chemicals and Apparatus, unobtainable elsewhere, required by various estates and the general public.

Assistance was given to various estate owners in repairing and standardising scientific instruments such as Polariscopes and Hydrometers.

The mechanically operated Paranaph boiler worked satisfactorily during the year and was found to be a great improvement over the samall hand machine which was formerly employed.

The receipts for Laboratory Fees and sales are shown in the following table, which also gives the figures for the past three years.

Amount lodged in Treasury for Calendar years:—

	1923.	1924.	1925.
	£ s. d.	£ s. d.	£ s. d.
Laboratory fees ..	209 6 3	159 1 0	174 3 6
Laboratory sales ..	1,205 9 1	1,038 15 2	1,030 1 5

The fees show an increase over those for last year in spite of the fewer number of sugars tested.

The receipts for Laboratory Sales are derived chiefly from the sale of commodities for Dipping Tanks, and as very few new tanks are now being constructed the demand tends to depend solely on the quantities required for recharging those already in operation. The use of Carbon bisulphide for killing weevils and small pests appears to be increasing.

During the year two Apprentices left the Department as their tenure had expired. One Apprentice was appointed.

The remainder of the staff is the same as last year.

W. Leigh Barnett, M.A., B.Sc., F.I.C.,
Deputy Island Chemist.

IX.—STAFF.

Changes.—Mr. S. C. Gordon, Temporary Clerk in the Head Office was promoted to an Assistantship in the Revenue Department. The vacancy in this office was filled by the appointment of Mr. R. H. Small and, subsequently, of Mr. E. N. Sheridan.

Other appointments were made as follows:—

Messrs. W. S. Whittingham, G. N. Roche, I. L. Dowden, R. G. Glen Campbell, L. A. Russell, E. M. Carey and G. G. Macfarlane, Inspector of Plant Diseases; Mr. T. P. Lecky, Foreman Farm School; Mr. F. C. Martin, Foreman Hope Stock Farm; Mr. B. E. Lewis, Laboratory Apprentice.

The following officers severed their connection with the Department:

Mr. S. Rose, Foreman Hope Stock Farm; Mr. J. W. Caseley, Foreman Farm School; Mr. R. A. C. Vickeridge, Laboratory Apprentice; Mr. W. P. Tucker, Inspector of Plant Diseases.

I regret to record the death, on the 25th November, 1925, of Dr. E. Tavares, who was then Acting as Government Veterinary Consultant.

Dr. Tavares had acted as Veterinary Consultant on several occasions and had invariably discharged his duties with zeal and fidelity.

Dr. V. Tavares was appointed to the vacant post.

I desire to acknowledge the effective services rendered by the Advisory Committee on the Banana Industry and the Boards of Management for Lititz and Grove Place and the assistance I have received from the Members of these advisory bodies in the administration of important sections of the work of the Department.

I have also to acknowledge the willing and effective services of the Staff during the past year.

I have the honour to be,

Sir,

Your obedient Servant,

H. H. Cousins,
Director of Agriculture.

The Honourable
The Acting Colonial Secretary,
Kingston.